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EXAMINER

TRAN, VINCENT HUY

ART UNIT	PAPER NUMBER
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2115

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,206

Applicant(s)

FARKAS ET AL.

Examiner

Vincent T. Tran

Art Unit

2115

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 18-34, 36-40 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-6, 8-16, 18-20, 22-34, 36-40, 42 is/are rejected.
- 7) ☒ Claim(s) 4, 7 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the communication filed on 7/12/2006
2. Claims 1-16, 18-34, 36-40, 42 are pending for examination.
3. The text of those sections of Title 35, U.S. code not included in this action can be found in a prior Office action.

Response to Amendment

4. Applicant's arguments filed 7/12/2006 have been fully considered but they are not persuasive. See discussion in claim 1.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 39 recites the limitation "Wherein the means for cooling is further..." in line 12.

There is insufficient antecedent basis for this limitation in the claim.

7. Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim Rejections - 35 USC § 102

Art Unit: 2115

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 11-12, 16, 18, 22-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Nakazato US 20030188210.

11. As per claim 1, Nakazato discloses a method of controlling power consumption for at least one computer system, the method comprising:

detecting an amount of power consumed by the at least one computer system [0035];

comparing the amount of power consumed by the at least one computer system to a threshold [0035, 0039], wherein the threshold is based on the maximum power output of the power supply, wherein the power supply for the at least one computer system has a maximum power output based on an average power consumption of the at least one computer system¹[0008]; and

¹ As disclose by Nakazato in paragraph 0004 and 0007, conventionally, information processor, a maximum power consumption of the system as a whole is generally estimated during system design. An AC adapter or batter pack is used that has a power capacity that allows for the estimated maximum power consumption. With recent general personal computers, however, the power consumption has bee increasing as the processing power of CPUs increase. For this reason, an AC adapter/battery pack of higher capacity will be required which may result in problems of increased cost, increase size and elevated temperature of the case surface.

Nakazato presented an invention related to a computer system comprising an AC adapter or battery pack of lower power capacity to used [0050]. Specifically, Nakazato teaches the controller operable to throttle the CPU when the average power consumption of the system exceeding the threshold [Pu – 0044] wherein Pu is the maximum power output of the power supply [0050-0051]. Therefore, it is inherent that the power supply has a maximum power output based on an average power consumption of the computer system since it would be inefficient if the power supply having a maximum output below the average power consumption where the computer would operate below it's capacity most of the time; or if the power supply having a maximum output above the average power consumption which result in increased size and cost.

placing one or more components of the at least one computer system in a lower power state to reduce power consumption in response to the amount of power consumed by the at least one computer system exceeding the threshold [0039].

12. As per claim 11, Nakazato discloses a processor for the at least one computer system is operable to be place in multiple lower power state, each being associated with a lower clock speed, and placing one or ore components of the at least one computer system in a lower power state comprises placing the processor in one of the multiple lower power states [Fig. 4].

13. As per claim 12, Nakazato discloses placing the processor in one or the multiple lower power state comprises instructing the processor not to consume more than a predetermined amount of power [Fig. 4].

14. As per claim 16, Nakazato discloses a system generating power for at least one computer system, the power system comprising:

at least one power supply operable to provide power for the at least one computer system [20-23 fig. 2];

a power monitor operable to determine the power consumption of the at least one computer system [24 fig. 2]; and

a power provisioning system [24 fig. 2, 3] operable to compare the power the power consumption of the at least one computer system to a threshold associated with a maximum capacity of the power supply, and further operable to place one or more components of the at

Art Unit: 2115

least one computer system in a lower power state in response to the measured power output exceeding the threshold [fig. 4];

wherein the maximum capacity of the power supply is based on an average power consumption of the at least one computer system [see discussion in claim 1].

15. As per claim 18, see discussion in claim 1.

16. As per claim 22, Nakazato discloses the one or more components comprises a processor, and the power provisioning system is operable to instruct the processor to reduce clock speed for reducing power consumption [fig. 3, 4].

17. As per claim 23, Nakazato discloses the one or more components comprises a processor, and the power provisioning system is operable to instruct the processor to reduce power consumption of the processor to a calculated value or range of value [fig. 4].

18. As per claim 24, Nakazato discloses the one or more components comprise a processor operable to be placed in one of multiple lower power states [fig. 4].

19. Claims 1, 10, 16, 25, 29-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Bodas US 20040163001.

20. As per claim 1, Bodas discloses a method of controlling power consumption for at least one computer system, the method comprising:

Art Unit: 2115

detecting an amount of power consumed by the at least one computer system [paragraph 0028];

comparing the amount of power consumed by the at least one computer system to a threshold [step 605 fig. 6], wherein the threshold is based on the maximum power output of the power supply [paragraph 0005-0007, 0023, 0033], wherein the power supply for the at least one computer system has maximum power output based on an average power consumption of the at least one computer system [paragraph 0025]²; and

place one or more components of the at least one computer system in a lower power state to reduce power consumption in response to the amount of power consumed by the at least one computer system exceeding the threshold [step 620 fig. 6; paragraph 0029].

21. As per claim 10, Bodas discloses the prioritizing applications running on the multiple computer systems; wherein

the step of placing one or more components in a lower power state further comprises identifying one of the multiple computer systems running one or more low priority applications,

² In summary, Bodas teaches, in prior computer system, the manufactures typically designed the power supply to be able to handle the maximum estimated power consumption of the components in the computer system which referred as Pmax. However, in reality this Pmax usually based on an assumption that the computer system is configured with the most power hungry components which resulting in inflated estimated power consumption and an over design power supply.

Therefore, Pmax may be set by automatically monitoring the power consumption level of the computer system over a period of time using the techniques described in the application titled "Method to estimate power and cooling requirement of systems" of application 10/022448 (Patent No. 6,804,616) [paragraph 0025].

In application 10/022448, Bodas teaches Pmax usually defines maximum power capability of the power supply in the system; where, in the process of determining a value of Pmax (process of determining the power supply capability), system designer usually consider the worst case configuration of a system [col. 1 lines 39-45]. By reconfigure the Pmax to reflect the average power consumption of the system, in most Ptarget [Pconfig] will be lower than Pmax which would help the user more accurately allocate and budget more realistic number for the infrastructure and in most cases this Ptarget will save both cost and spaces [col. 5 lines 5-33; col. 6 lines 15-25] where Pconfig number is printed and labeled outside of the cabinet [col. 7 lines 39-53] indicating the maximum output of the power supply which based on the average consumption of the system.

Art Unit: 2115

and placing at least one component in the identified computer system in a lower power state [paragraph 0036].

22. As per claim 16, Bodas discloses a system generating power for at least one computer system, the power system comprising:

at least one power supply operable to provide power for the at least one computer system [240 fig. 2];

a power monitor operable to determine the power consumption of the at least one computer system [205 fig. 2]; and

a power provisioning system [250 fig. 2, 3] operable to compare the power the power consumption of the at least one computer system to a threshold associated with a maximum capacity of the power supply, and further operable to place one or more components of the at least one computer system in a lower power state in response to the measured power output exceeding the threshold [step 605 fig. 6];

wherein the maximum capacity of the power supply is based on an average power consumption of the at least one computer system [see discussion in claim 1].

23. As per claim 25, Bodas discloses the at least one computer system comprises multiple computer systems [fig. 3], and the power provisioning system is operable to prioritize the multiple computer systems for placement in lower-power state based on an importance of applications executing on the multiple computer systems [paragraph 0036].

Art Unit: 2115

24. As per claim 29, Bodas discloses the at least one computer system comprises multiple computer systems receiving power via a power bus, and the power provisioning is operable to disconnect a portion of a power bus to place one of the multiple computer in a lower power state [inherent fig. 2].

25. As per claim 30, Bodas discloses the power monitor [205 fig. 2] is connected to the at least one power supply [204 fig. 1] to measure the output power of the at least one power supply for determining the power consumption of the at least one computer system [paragraph 0042].

26. As per claim 31, Bodas discloses the at least one computer system comprises multiple computer systems connected to the at least one power supply via a power bus [inherent fig. 2 and 3], and the power monitor is connected to the power bus to measure the power consumption of the multiple computer systems [paragraph 0033-0034].

27. As per claim 32, Bodas discloses the one or more components comprise one or more of a processor, a floating point unit, one or more storage devices, one or more memory ICs, and a cache or a portion of a cache [inherent].

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2115

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

29. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

30. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

31. Claims 2-3, 5, 19-20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato as applied to claim 1 or 16 above, and further in view of Montero et al.

32. As per claim 2, Nakazato teaches a cooling system is operable to cool the at least one computer system [270 fig. 3]. However, Nakazato does not teach the determining whether sufficient cooling resource are available and placing at least one component of the at least one computer system in a lower state in response to insufficient cooling resources.

Montero et al. teach another computer system includes a plurality of cooling fans configured to provide sufficient cooling to the system. Specifically, Montero et al. teach determining whether insufficient cooling resources are available for cooling the at least one computer system [paragraph 0028, 0039]; and

placing at least one component of the at least one computer system in lower-power state in response to insufficient cooling resources being available to cool the at least one computer system [paragraph 0045-0046].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the system of Nakazato with the determining of cooling resources of Montero et al. to placing at least one component of the at least one computer system in a lower state in response to insufficient cooling resources.

The motivation for doing so would have been to prevent damage to the computer system due to insufficient cooling.

Therefore, it would have been obvious to combine Nakazato with Montero et al. to obtain the invention as specified in claim 2.

33. As per claim 3, Montero et al. teach determine whether excess cooling resources are available for cooling the at least one computer system [From table 3 and paragraph 0046³]; and placing the at least one component of the computer system currently in lower-power state [operating speed at 50%] in a higher-power state [operating speed at 75% inherently at full speed], such that the at least one component consumes more power, in response to excess cooling resources being available.

34. As per claim 5, Montero et al. teach determining whether insufficient cooling resources are available for cooling the at least one computer system comprises determining whether an amount of cooling fluid distributes to the at least one computer system exceeds a threshold associated with the maximum capacity of the cooling system [Table 3 – When both fans are operating and the temperature still increasing up to 96 degree].

³ the decrease of temperature indicated that excess cooling resources are available.

35. As per claim 19, Montero et al. teach the power provisioning system is connected to a cooling system [287 fig. 2B] and is operable to receive messages from the cooling system [inherent] associated with the availability of cooling resources for cooling the at least one computer system, the power provisioning system being operable to control the power consumption of the at least one computer system based on a message received from the cooling system [fig. 3].

36. As per claim 20, Montero et al. disclose the power provisioning system is operable to place at least one component of the at least one computer system in a lower-power state in response to receiving a message from the cooling system indicating that insufficient cooling resources are available for cooling the at least one computer system [inherently from Table 3 paragraph 0045].

37. Claims 6, 8, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato as applied to claim 1 above, and further in view of Kling et al. ("Kling").

38. As per claim 6, Nakazato does not teach comparing the amount of power consumed by the at least one computer system to a second threshold.

Kling teaches another method relates to computer systems and more particularly to limiting the power consumed in computer system by throttling the power consumed by an component in the computer system in response to a high power condition. Specifically, Kling

Art Unit: 2115

teaches comparing the amount of power consumed by the at least one computer system to a second threshold [paragraph 0035 – total power consumption reaches the lower threshold];

placing the at least one component of the computer system, currently in a lower-power state, in a higher-power state, such that the at least one component consumes more power, in response to the amount of power consumed by the at least one computer system being less than the second threshold [paragraph 0035].

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the system of Nakazato with the second threshold of Kling order to allow the system to resume operation at full speed without damaging the system.

39. As per claim 8, Kling et al. disclose one or more of the threshold based on the maximum power output of the power supply and the second threshold is determined such that a minimal change in power consumption does not result in changing a power state of the at least one component [paragraph 0033].

40. As per claim 15, Kling et al. disclose placing one or more components in a lower state comprises reducing power consumption of one or more of a processor [paragraph 0031].

41. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato as applied to claim 1 above, and further in view of Bradley et al..

42. As per claim 9, Nakazato teaches the replacing the at least one component in a lower power state in response to the thermo-coupled in order to cool those computer system. However,

Nakazato does not teach placing the at least one component of the at least one computer system in a lower power state in response to the cooling efficiency of the components.

Bradley et al. teach another method for managing power consumption in a computer server. Specifically, Bradley et al. teach determining a cooling efficiency of components in the at least one computer system [42-46 fig. 4]; and

selecting one or more of the components to be placed in a lower power state based on an amount of energy needed to cool the one or more components; wherein a component requiring more energy to be cooled is selected before a component requiring less energy to be cooled [46-47 fig. 4].

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the system of Nakazato with the placing of the at least one component of the at least on computer system in a lower power state in response to the determining of its cooling efficiency as taught by Bradley et al.

The motivation for doing so would have been to provide the system a more efficient way to selectively place the at least one component of the computer system in a lower-power state.

43. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato as applied to claim 1 above, and further in view of Oprescu et al.

44. As per claim 13, Nakazato teaches placing one or more components of the at least one computer system in a lower-power state comprises determining the one or more components to be placed in a lower power state base on the priority information. However, Nakazato does not

teach expressly the storing of information including components in the at least one computer system, power state of the components, power consumption of the component.

Oprescu et al. teach another power management system that capable of tracking the total amount of power drawn from a bus by devices connected to the bus. Specifically, Oprescu et al. teach a repository [50 fig. 2] storing power state information including power consumption and priority information, wherein the power provisioning system is operable to utilize the power state information to identify a component of the one or more components [col. 8 lines 43-51] to be placed in a lower-power state or a higher power state [109, 114, 115 – 110 fig. 2].

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the system of Nakazato with the repository storing power state information as taught by Oprescu et al. in order to provide the power controller the ability to precisely determining the actual power requirements of devices and more effectively controlling the operation of the devices to efficiently utilize available power [col. 3 lines 1-14].

45. As per claim 14, Nakazato teaches placing the at least one component of the computer system currently in a lower power state in a higher power state. However, Nakazato system modified by Oehler et al. do not teach placing the component in to a higher power state based on the stored information. However, it would have been obvious to one of ordinary skill in the art that, since the system placing a component into the lower power state base on the stored information, the system would included the claimed placing of a component into the higher power state based on the stored information.

Art Unit: 2115

46. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato as applied to claim 16 above, and further in view of Oprescu et al.

47. As per claim 26, Nakazato teaches the power control, when the amount of power consumed by the at least one computer system exceeded a threshold, selectively powering off lower priority devices to reduce the power drawn. However, Nakazato does not teach a repository storing power state information for the one or more of components in the at least one computer system, wherein the power provisioning system is operable to utilize the power state information to identify a component of the one or more components to be placed in a lower-power state or a higher power state.

Oprescu et al. teach another power management system that capable of tracking the total amount of power drawn from a bus by devices connected to the bus. Specifically, Oprescu et al. teach a repository [50 fig. 2] storing power state information, wherein the power provisioning system is operable to utilize the power state information to identify a component of the one or more components [col. 8 lines 43-51] to be placed in a lower-power state or a higher power state [109, 114, 115 – 110 fig. 2].

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the system of Nakazato with the repository storing power state information as taught by Oprescu et al. in order to provide the power controller the ability to precisely determining the actual power requirements of devices and more effectively controlling the operation of the devices to efficiently utilize available power [col. 3 lines 1-14].

Art Unit: 2115

48. As per claim 27, Oprescu et al. teach the power state information comprises one or more of power consumption of the one or more components and priority information associated with prioritizing the one or more components for changing the power state of the one or more components [50 fig. 2].

49. Claims 33-34, 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodas in view of Montero et al.

50. As per claim 33, Bodas teaches a system comprising:

a multiple computers housed in an enclosure [100 fig. 3];

a cooling system [270 fig. 3] operable to distribute cooling fluid to the multiple computer systems in the enclosure based on one or more of the power consumption and heat dissipation of the multiple computer system; and

A power system connected to the cooling system [270 fig. 3] and including a power supply [240 fig. 2] operable to generate power for the multiple computer systems and a power provisioning system [250 fig. 3], wherein the power provisioning system is operate to control power consumption of at least one or the multiple computer system based on the availability of cooling resources for cooling the multiple computer systems [0032-EPTM 250 may mange power allocated to the computer system based on power and cooling capacity].

wherein the cooling system is operable to transmit a message to the power provisioning system [0035-EPTM may also receive status information about elements of cooling system such as air conditioning unit 270] to allow the EPTM to manage the cool air required to keep the

computer system in an acceptable operating condition; wherein, when there is insufficient cool air, the EPTM may lower the target power consumption levels of the computer system [0053].

Bodas does not explicitly teach the indicating of the insufficient or excess of cooling resources.

Montero et al. teach another method and apparatus relates to the field of improving the reliability of a computer or other including mainframes, workstations, servers, e.g., [0031] wherein the system comprising plurality of cooling fans configured to provide sufficient cooling air to maintain a desired operating temperature. Specifically, Montero et al. teach

wherein the cooling system is operable to transmit a message to the power provisioning system [287 fig. 2B] indicating insufficient cooling resources are available for cooling the multiple computer system or excess cooling resources are available for cooling the multiple systems [0029 inherent-since the system had to know the operating status of each fan].

the power provisioning system is operable to reduce power consumption of at least one component of the computer system in response to receiving a message indicating insufficient cooling resources are available for cooling the multiple computer system [Table 3-indicating the available of cooling resources]; and

the power provisioning system is operable to increase power consumption of at least one of the component in response to receiving a message indicating excess cooling resources are available for cooling the multiple computer systems [inherent – Table 3].

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the system of Bodas with the determining of cooling resources of Montero et al.

The motivation for doing so would have been to optimize and improve the reliability of a computer system by allow the system to operate at it's maximum speed according to the availability of the cooling resources.

Therefore, it would have been obvious to combine Bodas with Montero et al. to obtain the invention as specified in claim 33.

51. As per claim 34, Bodas teaches the cooling system is designed based on a nominal heat dissipation of the multiple computer systems [inherent – since the system would not required to throttle if cooling system is design base on the maximum heat dissipation] and the power supply is designed based on the nominal power consumption of the multiple computer systems [see discussion in claim 1].

52. As per claim 36, Bodas teaches the power provisioning system is operable to compare the power consumption of the multiple computer systems to a threshold associated with a maximum capacity of the power supply [see claim 1] and reduce the power consumption of at least one of the multiple computer systems in response to the power consumption exceeding the threshold [fig. 6].

53. As per claim 37, Bodas discloses the enclosure is a rack [100 fig. 3].

54. As per claim 38, Bodas discloses the enclosure is a data center [100 fig. 3].

Art Unit: 2115

55. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato in view of Montero et al.

56. As per claim 39, Nakazato discloses an apparatus controlling power consumption of at least one computer system using a power supply means, the apparatus comprising:

means for determining an amount of power consumed by the at least one computer system [24 fig. 2];

means for comparing the amount of power to a threshold, wherein the threshold is based on the maximum power output of the power supply means, wherein the power supply means has a maximum power output based on an average power consumption of the at least one computer system [see discussion in claim 1]; and

means for placing one or more components of the at least one computer system in a lower power state to reduce power consumption in response to the power consumption of the at least one computer system exceeding the threshold [fig. 4];

Nakazato does not teach means for cooling is further operable to determine whether excess cooling resources are available for cooling the at least one computer system.

Montero et al. teach another computer system includes a plurality of cooling fans configured to provide sufficient cooling to the system. Specifically, Montero et al. teach means for cooling is further operable to determine whether excess cooling resources are available for cooling the at least one computer system; and

the means for placing the at least one component [CPU] of the computer system currently in a lower state is further inherently operable to place the at least one component in a higher power state such that the at least one component consumes more power, in response to excess

cooling resources being available [table 3 of paragraph 0045; 0046; see further discussion in claim 3].

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the system of Nakazato with the means to determine whether excess cooling resources are available for cooling the at least one computer system of Montero et al. to place the at least one component [CPU] of the computer system currently in a lower state is further operable to place the at least one component in a higher power state such that the at least one component consumes more power, in response to excess cooling resources being available

57. As per claim 40, see discussion in claim 2.

58. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato and Montero et al. as applied to claim 39 above, and further in view of Kling.

59. As per claim 42, see discussion in claim 6.

60. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bodas in view of Shimoda et al. U.S. Patent No. 6,212,644 ("Shimoda").

61. As per claim 33, Bodas teaches a system comprising:

a multiple computers housed in an enclosure [100 fig. 3];

a cooling system [270 fig. 3] operable to distribute cooling fluid to the multiple computer systems in the enclosure based on one or more of the power consumption and heat dissipation of the multiple computer system; and

A power system connected to the cooling system [270 fig. 3] and including a power supply [240 fig. 2] operable to generate power for the multiple computer systems and a power provisioning system [250 fig. 3], wherein the power provisioning system is operate to control power consumption of at least one or the multiple computer system based on the availability of cooling resources for cooling the multiple computer systems [0032-EPTM 250 may mange power allocated to the computer system based on power and cooling capacity].

wherein the cooling system is operable to transmit a message to the power provisioning system [0035-EPTM may also receive status information about elements of cooling system such as air conditioning unit 270] to allow the EPTM to manage the cool air required to keep the computer system in an acceptable operating condition; wherein, when there is insufficient cool air, the EPTM may lower the target power consumption levels of the computer system [0053].

Bodas does not explicitly teach the indicating of the insufficient or excess of cooling resources.

Shimoda teaches another system relates to the controlling of temperature inside a computer system, wherein the power provisioning system [76 fig. 4] is operable to control power consumption of at least one component of the computer systems based on the availability of cooling resources. Specifically, Shimoda teaches

the cooling system [60 fig. 3] is operable to transmit a message to the power provisioning system indicating insufficient cooling resources are available for cooling the computer system or excess cooling resources are available for cooling the computer systems [col. 3 lines 37-51];

the power provisioning system is operable to reduce power consumption of at least one component of the computer system in response to receiving a message indicating insufficient

Art Unit: 2115

cooling resources are available for cooling the multiple computer system [col. 3 lines 58-60; lines 2-4]; and

the power provisioning system is operable to increase power consumption of at least one of the component in response to receiving a message indicating excess cooling resources are available for cooling the multiple computer systems [col. 4 lines 7-9].

Bodas and Shimoda are analogous art because they from a similar problem solving area; preventing over heat in a computer system.

At the time of the invention was made, it would have been obvious to one of ordinary skill in the art the have modified the system of Bodas with the determining of cooling resources of Shimoda.

The motivation for doing so would have been to optimize and improve the reliability of the computer system.

Therefore, it would have been obvious to combine Bodas with Shimoda to obtain the invention as specified in claim 33.

Allowable Subject Matter

62. Claim 4, 7, 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

63. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Okada et al. US 20020224224 : “*the fuel cell has a maximum output power which is higher than the average power consumption of and lower than the maximum power consumption of the electronic equipment*” [Abstract].

2) Owen, Jr. et al. U.S. Patent No. 3,887,842:

“the power supply system of the present invention have been designed with *maximum output power equal to the average power requirements of the system*. Thus, there is provided a significant reduction in quiescent power, heat generated, and system size and weight [col. 7 lines 5-10].

3) Husain et al. US. 2003/0126260:

“The operation rule used to analyze the temperature may indicate that a fan speed of a fan on or near the computer blade 401 may need to be increased (i.e. to decrease the temperature of the processor or board). Other resource management operations may also be indicated by operation rules analyzed by the resource manager 409. For example, if data collected about the temperature of the processor or board of the computer blade 401 and the fan on or near the computer blade 401 is analyzed and the resultant indicator value returned indicates that the temperature of the processor of the computer blade 401 is above a safe threshold and the fan speed is at a maximum fan speed, the resource manager 409 may perform one or more resource management operations to avert damage to the computer blade 401, including, for example, deactivating the computer blade 401.” [paragraph 82].

“At substantially the same time, computer blade 403 may be analyzing collected data from computer blade 401 and 405 to determine that computer blade 401 and computer blade 405 need to be swapped. *In one embodiment, computer blade 401 may broadcast to at least a subset of the computers in the network a decision that the speed of the fan near the processor of the computer blade 403 needs to be increased.*” [paragraph 0085].


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent T. Tran whose telephone number is (571) 272-7210. The examiner can normally be reached on 7:30-5:00.

Art Unit: 2115

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas c. Lee can be reached on (571)272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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